

TES

Site: <u>Herculaneum</u>
ID# <u>400006246373</u>
Break: <u>1.0</u>
Other: <u>6-4-99</u>

A717

JEFFREY L. ZELMS
VICE CHAIRMAN, PRESIDENT
AND CHIEF EXECUTIVE OFFICER
314-453-7140

THE
DOE RUN
COMPANY

SUITE 300
1801 PARK 270 DRIVE
ST. LOUIS, MO 63146
FAX 314-453-7198

REC'D
JUN 11 1999

~~REC'D~~ RCAP

REC'D

JUN 11 1999

RCAP.

06/04/99

Mr. Art Spratlin
USEPA Region VII, WSTM Division, RCRA Branch
726 Minnesota Avenue
Kansas City, MO 66101

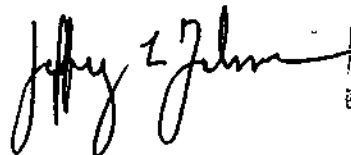
Dear Mr. Spratlin:

The Doe Run Company has long held a firm commitment to maintaining a safe and healthy environment for the people of Herculaneum and the surrounding area. Our decades-old environmental protection program is designed to constantly reduce the releases and transfers of lead particles from the smelter at Herculaneum through the addition of new pollution control devices and the development of new production and recycling processes. As a result, all lead releases and transfers have been reduced by more than 68 percent in the past ten years alone.

This achievement has not gone unnoticed. Enclosed for your information is a reprint of a recent article published in the respected trade journal *Mining Environmental Management* that chronicles our program and the efforts we have made to improve the environment in and around Herculaneum.

As an opinion leader in our community, I want you to be aware of our environmental improvement efforts and the industry recognition of our results. More importantly, you should know that we continue seeking additional ways to enhance our environmental stewardship and industry leadership. I would be pleased to tell you more about these programs.

Sincerely,



Jeffrey L. Zelms

REC'D

JUL 02 1999

APCO

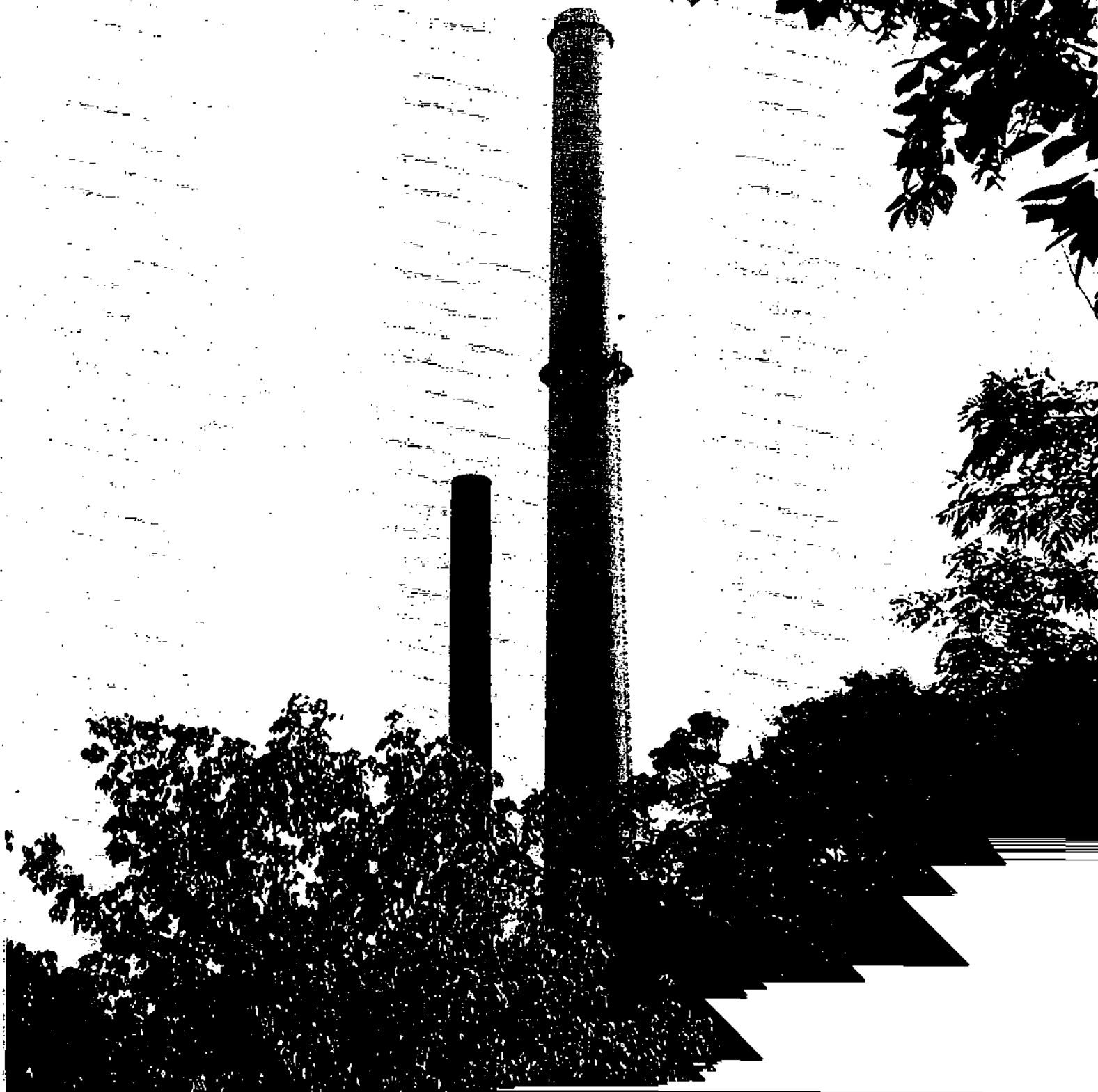
Enclosure
29-1003

40173206



SUPERFUND RECORDS

MINING Environmental MANAGEMENT



Herculaneum smelter

The history of Doe Run began in 1864, when the St. Joseph Lead Company (St. Joe) was formed to buy a large tract of land in south-east Missouri, and the company's first 'mine' was established. In 1886, a subsidiary was set up to acquire land on the Doe Run Creek where a rich ore body had been found. Subsequently, St. Joe built a lead smelter at Herculaneum, Missouri, which began operations in 1892 after a two-year construction phase. While the Herculaneum smelter has been substantially reconstructed over the years, it has been in continuous operation since 1892. It is now one of the largest employers in Jefferson County with nearly one-quarter of Doe Run's 1,300 US employees based there.

In 1986, Homestake Mining and St. Joe formed the Doe Run Company joint venture, 100 years after the formation of the original Doe Run Lead Company. In 1990, Homestake sold out of the joint venture and in 1994, the Renco Group, a private New York firm, acquired Doe Run. At present the company owns six mines, four mills (concentrators), one smelter/refinery complex and a lead recovery facility (see Technology section) all located in south-east Missouri, US. Outside of the US, in October 1997, the company purchased the Metaloroya (La Oroya) smelter and refinery from Centromin, the Peruvian Government's central mining organisation. Doe Run also purchased recently the Cobriza copper mine, which supplies about 40% of the smelter's feed.

Doe Run's US mines exploit polymetallic ores, which contain lead, zinc, copper and silver. Lead concentrates are transported to the 225,000 t/y Herculaneum smelter complex for treatment while 'non-lead' concentrates are sold off. In addition to finished grade lead, the smelter recovers by-products in the form of sulphuric acid, copper matte and a lead-silver crust. An acid plant collects the sulphur dioxide from the sinter plant and converts it into sulphuric acid, which is sold to fertiliser manufacturers. The waste slag produced by the smelting process, which contains small quantities of zinc, lead and copper, is stored on site for possible future processing.

TARGETING EMISSIONS

In addition to the economic and social stability that Doe Run brings to the local community, it also has a commitment to maintain a safe and healthy environment for the people of Herculaneum and the surrounding area (see statement). As a result of the company's environmental determination, between 1972 to 1979 atmospheric emissions from the smelter were cut by half. These emissions were halved again between 1979 and 1989 and again between 1989 and 1995.

The reductions were the result of a US\$40 million environmental programme during which new additions were made to the smelter's existing pollution control devices, which include a sulphur dioxide recovery unit, particulate filter baghouses, and a water treatment plant. The company operates a total of nine baghouses which clean over 1.7 million m³/hour. Plans are underway to extend the existing air filtering capacity by 136,000 m³/hour. All dust that is recovered in the baghouses is returned to the smelter.

In 1996-97, the company built a new 165 m stack and associated duct-work to cope with the increased volume of gases and because of concern about the age and stability of the old stack. The new stack has decreased further the smelter's environmental impact on the surrounding area and, being taller than the old one, has solved the occasional odour problem that was experienced by the people in the town. The improved duct-work has also reduced all the old leaks. The project cost a total of US\$6 million. The original 105 m stack is currently being dismantled and the old silica bricks are being consumed in the blast furnace or in the sinter plant.

33/50 PROGRAMME

The 33/50 Programme was developed by the US Environmental Protection Agency as a way to encourage companies to reduce, on a voluntary basis, environmental releases and off-site transfers of 17 high-priority Toxics Release Inventory (TRI) chemicals. The goals were to reduce the levels of these pollutants in the US by 33% in 1992 and by 50% in 1995, using 1988 as the baseline. These goals translated to a targeted reduction of 340,200 t (750

Mlb) of pollutants from the 680,400 t (1.5 billion lb) reported for 1988. The programme was extremely successful and surpassed its target a year ahead of schedule.

Targeted TRI Chemicals

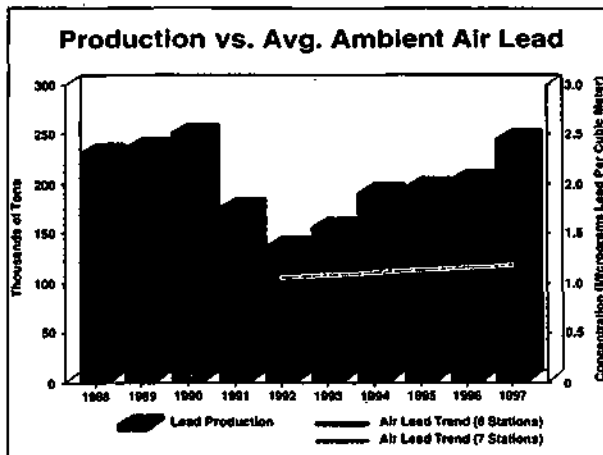
Benzene
Cadmium & compounds
Carbon tetrachloride
Chloroform
Chromium & compounds
Cyanide compounds
Dichloromethane
Lead & compounds
Mercury & compounds
Methyl ethyl ketone
Methyl isobutyl ketone
Nickel & compounds
Tetrachloroethylene
Toluene
1,1,1-Trichloroethane
Trichloroethylene
Xylenes

Prior to officially joining the EPA programme in 1991, Doe Run had already made substantial progress with its own releases and transfers of pollutants. Between 1988 and 1989, the smelter reduced its total TRI on-site land releases by over 5,300 t (an achievement which was cited by EPA as the third greatest facility-specific decrease in on-site land releases in the nation). By 1992, Doe Run had achieved a reduction of 74% in releases and transfers of TRI compounds, including lead.

The company started by increasing the percentage of lead in the concentrate sent to the smelter, thereby reducing the rate of slag production. This process required a joint effort between the mining and milling (concentrator) divisions and the Herculaneum smelter. The mining and milling divisions instituted tighter process controls and more rigorous

training for the control room employees. The mining division also developed better selective mining techniques to reduce the amount of waste rock and improved the efficiency of the materials separation process.

In addition to reducing the quantity of waste generated, this also had the benefit of improving the quality of the concentrate and



Herculaneum's commitment to on-going environmental improvement led to a 20% reduction in air lead concentrations at six existing monitoring sites in 1997, despite an 18% increase in production. A seventh site, added in 1992, has not achieved state standards. Several projects are due to be completed this year to improve the situation.



Smelter water is discharged to the Mississippi River after treatment.

reducing the content of certain impurities. This enabled the smelter to increase the rate at which it recycled slag internally into the sintering process from 66% to 80%. As a result of these and other efforts, Herculanéum reduced its annual releases and transfers of lead from 3,050 t in 1988 to 770 t in 1995.

Doe Run is continuing its efforts to reduce land releases even further. In conjunction with Mintek (the South African mineral technology company) and ISP (a British technology company), Doe Run is exploring a new slag fuming process that could reduce the zinc and lead content by 90%. In this process, zinc and lead are vaporised from the slag and then condensed and resolidified. The lead can then be recycled back into the smelting process. The zinc content can be sold as PW grade zinc product or reused in the smelter for desilverising.

WATER TREATMENT

The Herculanéum smelter is situated on the west bank of the Mississippi River and raw water for the project is extracted from the alluvial bed at a rate of 2,300 l/min. Waste water (effluent) and stormwater are treated in the

Our mission is to build on Doe Run's leadership position in the world metals industry. Integral to this mission is to be a low-cost producer and to support our customers, our employees and their families, and the society in which we live. We will accomplish this mission under the highest ethical, safety and environmental standards.

water treatment plant before being discharged back to the Mississippi River at a rate of 1,360 l/min. Sewage is discharged to the municipal sewage treatment installation. Recycling has enabled the company to reduce water consumption rates by half over the past 10 years. According to John FitzSimmons, Vice President Smelting and General Manager of Herculanéum, the smelter treats as much water as a small city (about 1.13 million litres/d).

The water treatment plant was constructed in the late 1970s in response to permit requirements. The waste water is treated by the addition of a lime slurry to increase the pH to 9.3, and a polymer to precipitate solids. In a clarifier tank, the underflow sludge is removed and the water passes through three filters before being released into the river. The treatment reduces the levels of lead, cadmium and zinc in the waste water to below 0.05 ppm. The sludge is returned to the smelter.

INDUSTRIAL HEALTH

Although the company's industrial hygiene programmes have existed for many decades, major progress has been made in the last 20 years at the Herculanéum smelter. Part of the progress has been achieved by persuading management that supporting and understanding the programme is essential. Only then would employees believe that changes must be made for their well-being and that of their families. According to Doe Run, none of the details of the programme are as important as this commitment and belief.

The company has implemented wide ranging training on the potential health effects of the metals to which employees are exposed. Goals have been set for the reduction in the average levels of metal absorption and these are made

more stringent every year. These lead reduction targets are an element of the employee gain sharing programme and can significantly affect their pay. Other elements of the hygiene programme include dedicated workplace clothing, shower and washing facilities, and centralised clean areas for meals and coffee breaks. Air monitoring and the use and proper maintenance of respirators are also important requirements. The performance of the various units is tracked and reported regularly to management and employees.

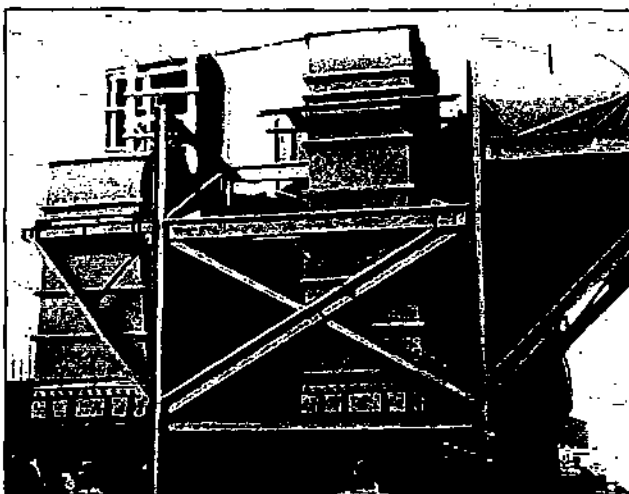
Over the past 20 years, the average lead level in the blood of employees has dropped from 60 µg/100 g to 26. In 1979, over 75% of employees at the smelter had blood lead levels above 50 µg/100 g; today that has dropped to 1%. Doe Run estimates that 'change-houses' (including respirator management and cafeterias) can cost from \$500 to several thousand dollars per worker, depending on whether existing facilities can be refitted to meet the new criteria. Respirators cost from \$100 to \$2,000/worker/y, depending on the level of protection required and the efficiency of the cleaning and management system. The US requirement for temporary relocation of employees is 50 µg/100 g.

These programmes have proved very successful and will be implemented at the metallurgical complex in Peru. Initial targets for Doe Run Peru are aimed at reducing the blood lead levels of employees to below 60 µg/100 g. This will be achieved initially by working with 10% (300) of the workforce.

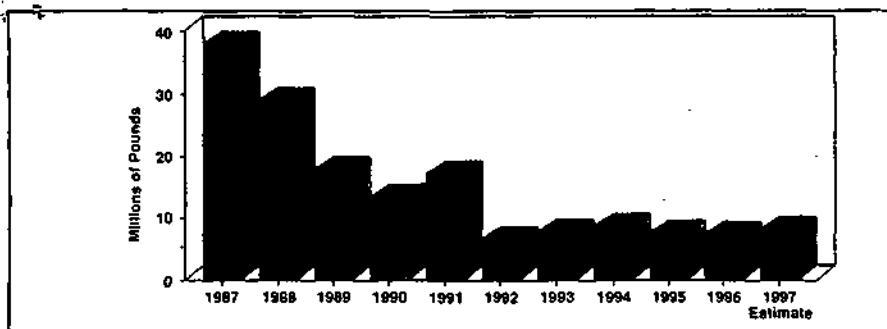
ENVIRONMENTAL COSTS

On average, over the past several years Doe Run has spent between US\$15-17 million annually on environmental expenses of which a disproportionate percentage is spent on the primary smelter at Herculanéum. With the revenues of the Missouri lead operations averaging \$260 million/y, this is equivalent to 6.5% of total earnings. In addition, capital expenditure for the Herculanéum smelter has averaged \$5-6 million/y over the past 10 years, a large proportion of which has been spent on projects that directly or indirectly reduce emissions.

A direct relationship between expenditure and emission reductions is not always immediately discernible and Dan Vornberg, Vice President Environmental Affairs at Doe Run states that, "a lot of the expense is related to



Baghouses efficiently remove particulates from the Herculanéum off-gasses.



Above: Total releases to land have been cut over the years by reducing the amount of waste rock that is mined and improving metal recovery - all of which decreases the amount of metals added to the slag storage area.

Right: Every six days, Bob Beattie collects data from each of the seven air monitoring stations located near the smelter. The information is sent to the Missouri Dept. of Natural Resources, one of several government environmental agencies that oversee Doe Run's operations.



meeting regulations, which do not necessarily relate to major reductions in emissions, but may be more focused on the impact of the emissions". The company feels that it is able to gain more benefit from non-regulatory directed expenses as it has a better knowledge of where potential opportunities exist within the process, especially if these are not limited to the type of control to be applied.

Some of the waste reduction projects, such as recycling secondary residues into the circuit, are not necessarily economic on their own, but eventually save the company money by not incurring waste disposal costs. The smelter also accepts other people's waste (such as waste silica from glass manufacturers) as a substitute for fluxes; this will both offset purchases of flux

and earn payment, as recycling the material may reduce another company's long-term liabilities. Examples of programmes that only cover their cost include the purchase of additional equipment for materials handling (such as conveyors - \$1-1.5 million each - to recycle baghouse dust into the circuit).

DOE RUN PERU

Doe Run acquired Metaloroya in 1997 for a total investment of \$246 million, including \$125 million in capital, to be spent in the first five years of ownership. Located at 3,700 m in the Peruvian Andes, 190 km east of Lima, the smelter was commissioned in 1921 by Cerro de Pasco Corporation. In 1974, it was nationalised and became part of Centromin. A portion of Doe Run's investment will cover improving environmental and safety performance. Detailed plans have been submitted to the Peruvian Government to upgrade equipment, improve training and enhance environmental results. Doe Run intends to implement high environmental standards at its Peruvian operations (including the copper mine).

By Nathalie Rosin

For further information, please contact Dan Vornberg, Vice President Environmental Affairs, The Doe Run Co. Smelting Division, 881 Main Street, Herculaneum, MI 63048, US. Tel: (+1 314) 933 3134. Fax: 933 3150. Email: <greenbrown@aol.com>.

**Reprinted from
Mining Environmental Management, September 1998**

The Mining Journal Ltd, 60 Worship Street, London EC2A 2HD, UK.

Tel: (+44 171) 216 6060. Fax: 216 6050.

E-mail: mem@mining-journal.com